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AGROFORESTRY - A FOOD ECONOMY FOR THE THIRD WORLD

by Fibi Munene

NAIROBI, IDRC -- Scientists say that agroforestry, the science of blending agriculture and forestry, can increase food production without destroying fragile ecosystems in the dry areas of the tropics.

According to the Nairobi-based International Council for Research in Agroforestry (ICRAF), a complete food economy could be built around drought-resistant and multipurpose plants.

There are plants, for instance, that grow even under difficult conditions and fertilize the soil where they grow; plants that provide not only food, but also mulch and manure for companion planting, shade during the dry season, and wood for fuel, building and carpentry; plants whose pods or leaves provide feed for livestock, and whose roots improve moisture penetration and deter soil erosion.

Many such plants are under study by ICRAF. Prosopis juliflora, for example, a thorny, deciduous large-crowned and deep-rooted tree could, in about three years after planting, provide fruit and vegetable for the table, pods for fodder and nectar for high quality honey.

Prosopis, because of its high heat value, is excellent for firewood and charcoal. It is also very durable and can be used for making fence posts and in the construction of homes and furniture.

Leucaena, another valuable leguminous plant, through its many shrub and tree varieties can produce firewood, nutritious forage, timber, rich organic

fertilizer, and provide windbreaks, shade and ornamentation. Its ability to thrive on steep slopes, in poor soils and in areas with long dry seasons makes it suitable for restoring forest cover to watersheds.

The plant's drought tolerance and hardiness also offer promise for increasing meat and milk supplies in the dry tropics. In Australia, cattle fed on leucaena foliage have shown some of the highest weight gains ever recorded in the tropics.

The pigeon pea, a food crop with tall woody stalks, can be adapted to lands that are normally unsuited for other crops because of aridity or poor soils. Its dry seeds have a high protein content (22 percent) and are an important food crop in many tropical areas. The peas' immature pods are also eaten as fresh vegetables, and husks, foliage and the mature pods can be used for feeding animals. Taller varieties can also produce firewood.

In 1975, a study sponsored by Canada's International Development Research Centre (IDRC), recommended the establishment of an international organization to promote land use systems that would reduce deforestation in the tropics.

Agroforestry is not so much a new system as a new concern with keeping old practices that are useful and applying them to today's problems. For example, says Dr Bjorn Lundgren, ICRAF's Director, the Council is examining the scientific benefits of the traditional systems of shifting cultivation.

In shifting cultivation, a farmer clears a patch of forest or a stretch of savannah, plants crops for two or three years, and then moves to another spot when the soil becomes too worn to sustain growth. The land is left to be replenished by natural vegetation.

Shifting cultivation worked well when it supported a sparse population. But in some regions, such as in Africa, a high rate of population increase forces farmers to cut the fallow periods to meet growing food demands. The result is overgrazed or overcultivated land that produces less and less food.

Scientists at ICRAF believe that agroforestry practices can protect fragile ecosystems without undue social and environmental costs.

Because agroforestry is a system of continuous cultivation, it could meet the shifting cultivators' needs for food, fuel, and a source of cash. For instance, a small farmer could grow trees for paper mills as well as different food crops.

In the last year, ICRAF has developed a new program of work that includes the development of a multidisciplinary team of scientists to assess land use constraints, the collection and evaluation of existing agroforestry technologies, and the establishment of an efficient program for disseminating information on improved agroforestry techniques in the developing countries.

ICRAF's original supporters were the governments of Canada, Switzerland, Germany and The Netherlands. But, according to Dr Lundgren, it's current annual budget of $1.5 million is very modest compared to its mammoth task of making improved agroforestry techniques widely applicable in the developing countries. New donors are needed.

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